

Review₁: Final Exam

Name: _____

1. A 9.25 g piece of gold (density = 19.3 g/mL) was rolled out into a thin sheet measuring 32.0 cm x 18.0 cm.

a. Calculate the volume of the sheet of gold. Show work; use labels.

$$\text{Vol} = 0.479 \text{ mL}$$

b. Calculate the thickness of the sheet of substance B. Show work; use labels.

$$\text{Thickness} = 8.32 \times 10^{-4} \text{ cm}$$

2. A sample of Helium gas has a temperature of 273 K, a pressure of 85.5 KPa and a volume of 2.50 L. What is the temperature of the gas if the volume is change to 3.40 L and the pressure is changed to 65.0 KPa? (8 pts)

	P	T	V	n
Initial				
Final				
Effect				

$$T = 282 \text{ K}$$

3. A 90.0 g sample of ice at -45.0°C ends up completely melted into liquid water at 0.0 °C. How much energy is involved in this change?

$$Q = 39 \text{ kJ}$$

4. Write proper names for each formula. Write proper formulas for each name.

Formula	Name		Name	Formula
CS ₂	Carbon disulfide		Iron (III) acetate	Fe(C ₂ H ₃ O ₂) ₃
Sn(SO ₄) ₂	Tin (IV) sulfate		Dinitrogen pentoxide	N ₂ O ₅
P ₂ S ₃			Carbonic acid	H ₂ CO ₃
N ₂ O ₃			Manganese (VI) sulfate	
H ₂ SO ₄	Sulfuric acid		Sulfur dichloride	
Na ₂ O			Iron (II) hydroxide	

5. Electrons in atoms

a. Write out the spectroscopic notation (ex. 1s², 2s², etc.) for the following atoms:

(i) Iodine (53) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^5$

(ii) Cobalt (27) _____

(b) What is the most likely charge that each atom will take? Explain your reasoning using the spectroscopic notation as your guide.

(i) Iodine: Most likely charge ____ -1 ____
a. Reasoning:

By adding an extra electron to iodine, it will have a filled set of “p” orbitals (5p⁵ becomes 5p⁶) and a filled 5th energy level.

(ii) Cobalt: Most likely charge _____
a. Reasoning:
b.